

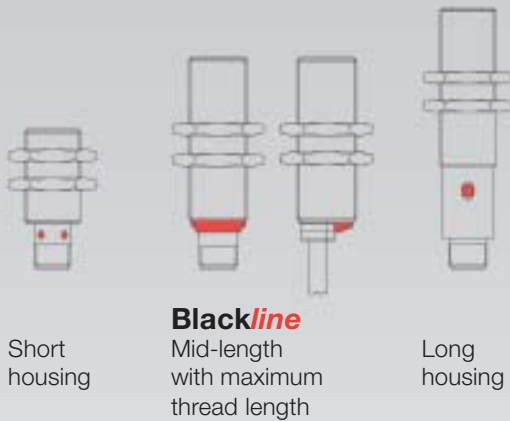
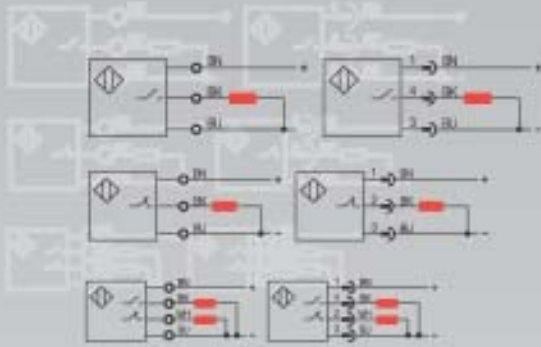
Inductive – DC 3-/4-wire

Our standard line in 3- and 4-wire DC versions

In this comprehensive line Balluff offers proximity switches from \varnothing 3 mm to 80x80 mm for virtually any application in the field of automation.

These high-quality sensors have been developed and manufactured to the state-of-the-art in accordance with all relevant standards. Our 100 % final inspection of all products is your assurance that only carefully tested sensors leave our plants.

- 1.1.2 \varnothing 3 mm
- 1.1.3 \varnothing 4 mm
- 1.1.5 \varnothing 4 mm, M5
- 1.1.6 M5
- 1.1.8 \varnothing 6.5 mm
- 1.1.12 \varnothing 8 mm
- 1.1.13 M8
- 1.1.22 M12
- 1.1.30 M18
- 1.1.38 M30
- 1.1.44 Block style housings continuation

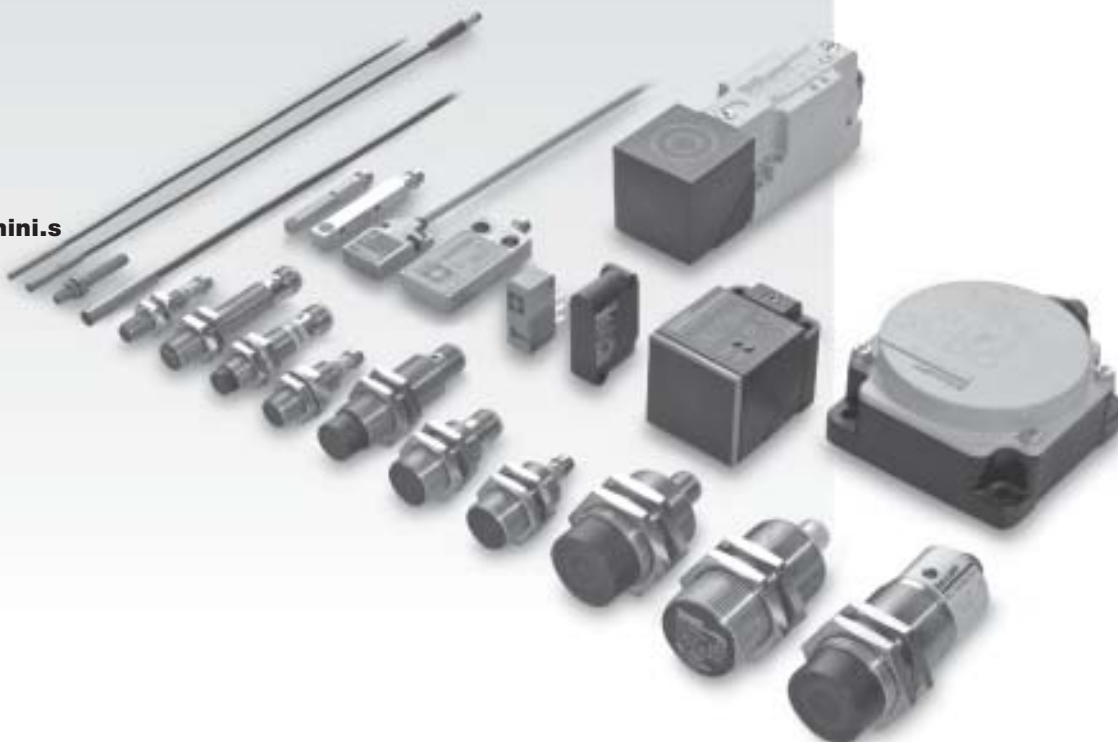


Short housing

Blackline
Mid-length with maximum thread length

Long housing

mini.s



Inductive Sensors

DC 3-wire
Block style housings
s_n 5 mm

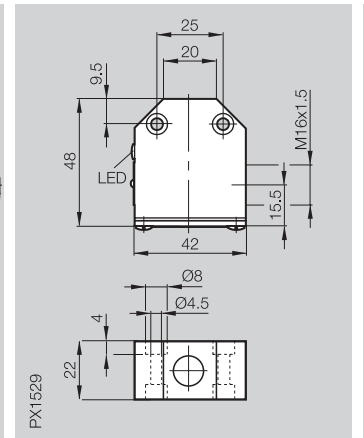
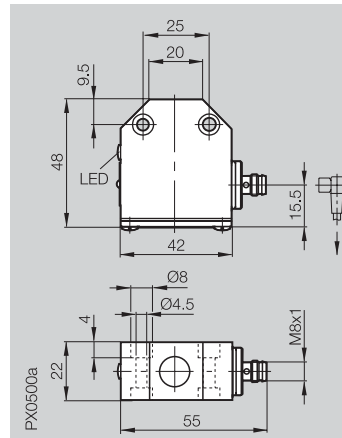
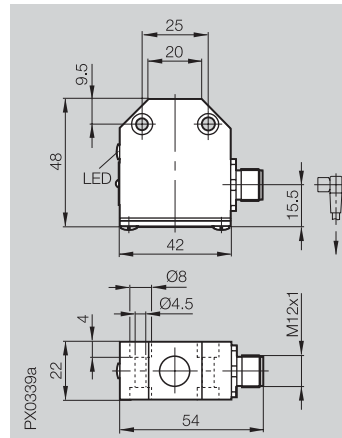
42×48×22 mm

Housing size
Mounting (see notes starting p. 1.0.11)
Rated operating distance s_n
Assured operating distance s_a

42×48×22 mm
flush
5 mm
0...4.1 mm

42×48×22 mm
flush
5 mm
0...4.1 mm

42×48×22 mm
flush
5 mm
0...4.1 mm



PNP
NO ①
NC ②
complementary ③

BES 516-346-H2-Y-S 4
BES 516-341-H2-Y-S 4

BES 516-346-H2-Y-S 49

BES 516-346-H2-Y
BES 516-341-H2-Y

NPN
NO ④
NC ⑤
complementary ⑥

BES 516-344-H2-Y
BES 516-340-H2-Y

Rated operational voltage U_e
Supply voltage U_B
Voltage drop U_d at I_e
Rated insulation voltage U_i
Rated operational current I_e
No-load supply current I₀ max.
Off-state current I_r
Polarity reversal protected
Short circuit protected
Permissible load capacitance

24 V DC
10...30 V DC
≤ 3.5 V
75 V DC
130 mA
≤ 25 mA
≤ 80 µA
yes
yes
≤ 1 µF

24 V DC
10...30 V DC
≤ 3.5 V
75 V DC
130 mA
≤ 25 mA
≤ 80 µA
yes
yes
≤ 1 µF

24 V DC
10...30 V DC
≤ 3.5 V
75 V DC
130 mA
≤ 25 mA
≤ 80 µA
yes
yes
≤ 1 µF

Repeat accuracy R
Ambient temperature range T_a
Frequency of operating cycles f
Utilization category
Function indicator

≤ 5 %
-25...+70 °C
500 Hz
DC 13
yes

≤ 5 %
-25...+70 °C
500 Hz
DC 13
yes

≤ 5 %
-25...+70 °C
500 Hz
DC 13
yes

Degree of protection per IEC 60529

IP 67

IP 67

IP 67

Housing material
Material of sensing face
Connection
max. wire cross-section

Anodized GD-Al
PA 12
Connector

Anodized GD-Al
PA 12
Connector

Anodized GD-Al
PA 12
Screw terminals
to 2.5 mm²

Recommended connector

BKS- 19/BKS- 20

BKS- 48/BKS- 49

① Wiring diagrams see page 1.0.6



Connector orientation



74x60.5x28 mm

Inductive Sensors

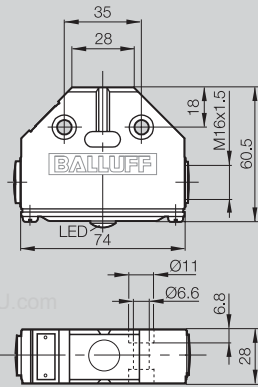
DC 4-wire
Block style housings
s_n 7 mm

74x60.5x28 mm

flush

7 mm

0...5.7 mm



BES 516-161-H3-L

BES 516-160-H3-L

24 V DC
10...30 V DC
≤ 1.5 V
75 V DC
400 mA
≤ 30 mA
≤ 130 µA
yes
no
≤ 1 µF
≤ 5 %
-25...+70 °C
300 Hz
DC 13
yes

IP 67

Anodized GD-Al
PA 12
Screw terminals
to 2.5 mm²

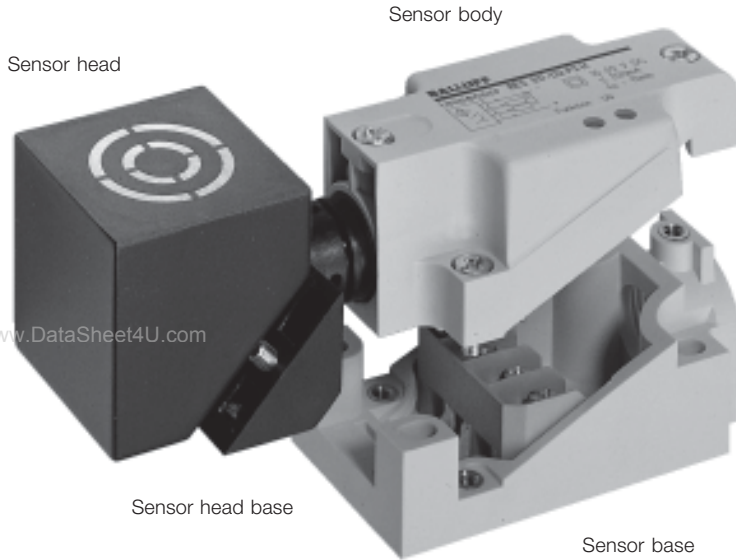
1.1

6

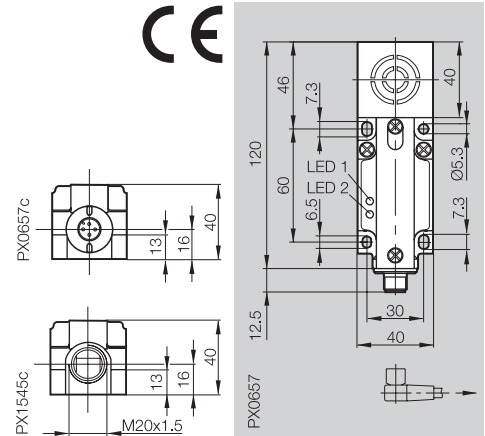
Connectors ...
page 6.2 ...

For additional multiple and single
position limit switches in main catalog
"The Mechanical Line", on
CD-ROM or online!





Housing size	40x40x120 mm Unisensor
Mounting (see notes starting p. 1.0.11)	flush
Rated operating distance s_n	15 mm
Assured operating distance s_a	0...12.2 mm



The Unisensor – multiple uses

- The Unisensor is made up of three modular components: sensor head (including sensor head base), sensor body and sensor base.
- Easily removable pin contacts join sensor head and sensor body, that means easy interchange of the modules without wiring.
- Sensor base with wiring terminals, self-lifting pressure plates and ample wiring room.
- Sensor head rotatable in 5 different positions for easy adaption to any application (see installation drawings).
- Plastic housing of PBT.
- DIN EN 60947-5-2 mounting dimensions.
- LED for supply voltage.
- LED for function indication
- Also available in special configuration for the automotive industry
- Cable fitting not included.

- In the complementary version, output terminals 2 or 4 can be wired to configure the switch as normally-closed (terminal 2) or normally-open (terminal 4). Connecting both terminals allows the switch to be used as both (see connection diagram ③ or ⑥).

Positioning the sensor head

- Loosen the two holding screws on sensor head
- Rotate sensor head 180°
- tighten holding screws

Rotating the sensor head

- Loosen holding screws
- Rotate the sensor head (complete with sensor head base) into the required position (range 270°)
- Tighten holding screws
- Sensor head is protected against over-rotation

PNP complementary ③ **BES 517-132-M3-H-S 4**

NPN complementary ⑥

Rated operational voltage U_o	24 V DC
Supply voltage U_B	10...55 V DC
Voltage drop U_d at I_o	≤ 2.5 V
Rated insulation voltage U_i	250 V AC
Rated operational current I_o	200 mA
No-load supply current I_o max.	≤ 20 mA
Off-state current I_l	≤ 80 μ A
Polarity reversal protected	yes
Short circuit protected	yes
Permissible load capacitance	≤ 1 μ F

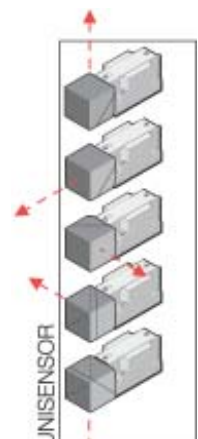
Repeat accuracy R	≤ 5 %
Ambient temperature range T_a	-25...+70 °C
Frequency of operating cycles f	100 Hz
Utilization category	DC 13
Function/power indicator	yes/yes

Degree of protection per IEC 60529	IP 67
Insulation class	□
Housing material	PBT
Material of sensing face	PBT
Connection	Connector
max. wire cross-section	

Recommended connector	BKS- 19/BKS- 20
possible mounting options	Fig. 1 to 5

③ Wiring diagrams see page 1.0.6

Switching distance ■■ see page 1.0.10



40×40×120 mm

Inductive Sensors

DC 4-wire
Block style housings
s_n 15 mm, 20 mm, 30 mm

1.1

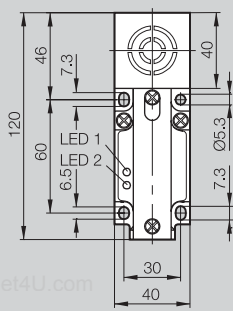
40×40×120 mm Unisensor
flush
15 mm
0...12.2 mm

40×40×120 mm Unisensor
flush
20 mm
0...16.2 mm

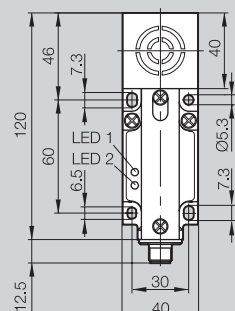
40×40×120 mm Unisensor
flush
20 mm
0...16.2 mm

40×40×120 mm Unisensor
non-flush
30 mm
0...24.3 mm

40×40×120 mm Unisensor
non-flush
30 mm
0...24.3 mm

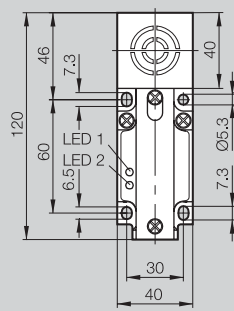


PX1545



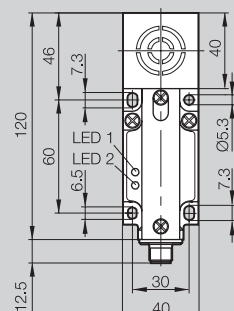
PX0657

Switching distance ■■

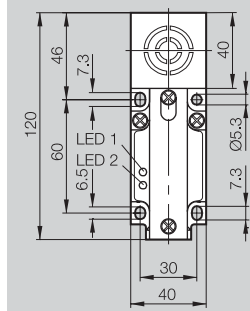


PX1545

Switching distance ■■



PX0657



PX1545

BES 517-132-M3-H

BES 517-132-M6-H-S 4

BES 517-132-M6-H

BES 517-132-M5-H-S 4

BES 517-132-M5-H

BES 517-134-M3-H

BES 517-134-M6-H-S 4

BES 517-134-M6-H

BES 517-134-M5-H-S 4

BES 517-134-M5-H

24 V DC
10...55 V DC

24 V DC
10...55 V DC

24 V DC
10...55 V DC

24 V DC
10...55 V DC

24 V DC
10...55 V DC

≤ 2.5 V

≤ 2.5 V

≤ 2.5 V

≤ 2.5 V

≤ 2.5 V

250 V AC

250 V AC

250 V AC

250 V AC

250 V AC

200 mA

200 mA

200 mA

200 mA

200 mA

≤ 20 mA

≤ 20 mA

≤ 20 mA

≤ 20 mA

≤ 20 mA

≤ 80 μA

≤ 80 μA

≤ 80 μA

≤ 80 μA

≤ 80 μA

yes

yes

yes

yes

yes

yes

yes

yes

yes

yes

≤ 1 μF

≤ 1 μF

≤ 1 μF

≤ 1 μF

≤ 1 μF

≤ 5 %

≤ 5 %

≤ 5 %

≤ 5 %

≤ 5 %

-25...+70 °C

-25...+70 °C

-25...+70 °C

-25...+70 °C

-25...+70 °C

100 Hz

50 Hz

50 Hz

60 Hz

60 Hz

DC 13

DC 13

DC 13

DC 13

DC 13

yes/yes

yes/yes

yes/yes

yes/yes

yes/yes

IP 67

IP 67

IP 67

IP 67

IP 67

□

□

□

□

□

PBT

PBT

PBT

PBT

PBT

PBT

PBT

PBT

PBT

PBT

Screw terminals
to 2.5 mm²

Connector

Screw terminals
to 2.5 mm²

Connector

Screw terminals
to 2.5 mm²

Fig. 1 to 5

BKS-_ 19/BKS-_ 20
Fig. 1 to 5

Fig. 1 to 5

BKS-_ 19/BKS-_ 20
Fig. 4 and 5

Fig. 4 and 5

Mounting options



Fig. 1

Fig. 2

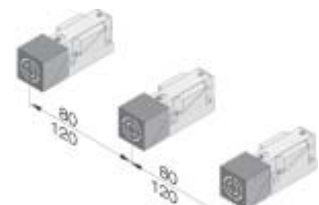
Fig. 3

Fig. 4

Fig. 5

Row mounting

flush 80 mm
non-flush 120 mm



6

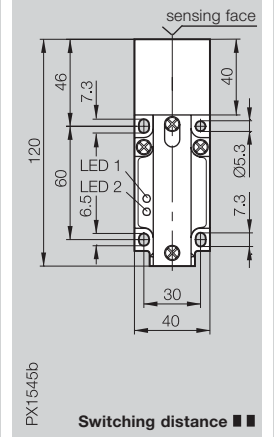
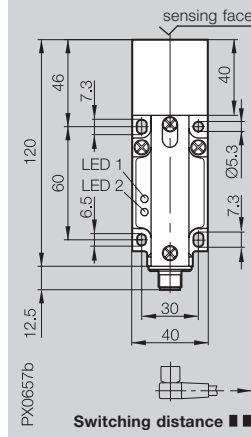
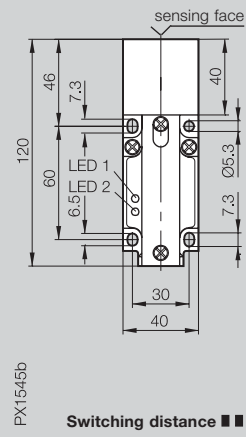
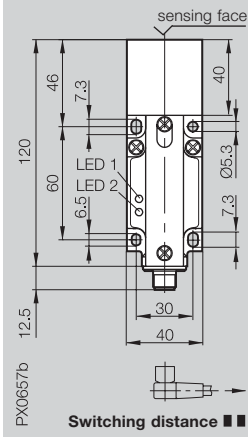
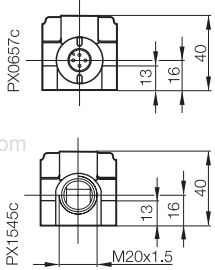
Connectors,
mounting
plate ...
page 6.2 ...

Inductive Sensors

DC 3-/4-wire
Block style housings
s_n 25/40 mm, 40 mm

40x40x120 mm

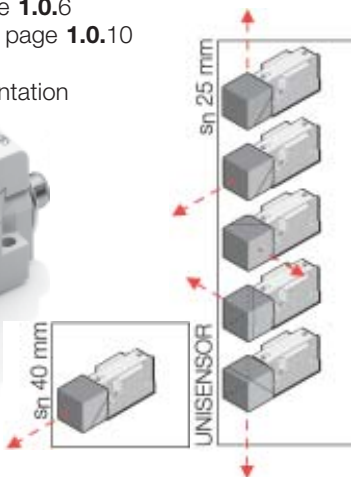
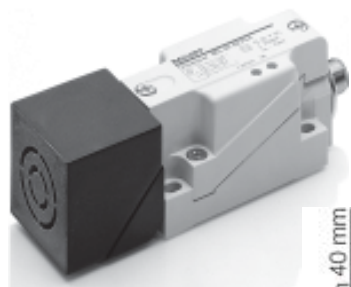
Housing size	40x40x120 mm Unisensor	40x40x120 mm Unisensor	40x40x120 mm Unisensor	40x40x120 mm Unisensor
Mounting (see notes starting p. 1.0.11)	non-flush	non-flush	non-flush	non-flush
Rated operating distance s _n	programmable 25/40 mm	programmable 25/40 mm	40 mm	40 mm
Assured operating distance s _a	0...20.3 mm/0...32.4 mm	0...20.3 mm/0...32.4 mm	0...32.4 mm	0...32.4 mm



PNP	NO ①	BES 517-385-V-C-S 4	BES 517-385-MV-C		
	complementary ③			BES 517-132-M7-H-S 4	BES 517-132-M7-H
NPN	complementary ⑥				
Rated operational voltage U _e	24 V DC	24 V DC	24 V DC	24 V DC	24 V DC
Supply voltage U _B	10...30 V DC	10...30 V DC	10...30 V DC	10...55 V DC	10...55 V DC
Voltage drop U _d at I _e	≤ 3.5 V	≤ 3.5 V	≤ 3.5 V	≤ 2.5 V	≤ 2.5 V
Rated insulation voltage U _i	250 V AC	250 V AC	250 V AC	250 V AC	250 V AC
Rated operational current I _e	200 mA	200 mA	200 mA	200 mA	200 mA
No-load supply current I ₀ max.	≤ 15 mA	≤ 15 mA	≤ 15 mA	≤ 20 mA	≤ 20 mA
Off-state current I _f	≤ 80 μA	≤ 80 μA	≤ 80 μA	≤ 80 μA	≤ 80 μA
Polarity reversal protected	yes	yes	yes	yes	yes
Short circuit protected	yes	yes	yes	yes	yes
Permissible load capacitance	≤ 1 μF	≤ 1 μF	≤ 1 μF	≤ 1 μF	≤ 1 μF
Repeat accuracy R	≤ 5 %	≤ 5 %	≤ 5 %	≤ 5 %	≤ 5 %
Ambient temperature range T _a	-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C
Frequency of operating cycles f	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz
Utilization category	DC 13	DC 13	DC 13	DC 13	DC 13
Function/power indicator	yes/yes	yes/yes	yes/yes	yes/yes	yes/yes
Degree of protection per IEC 60529	IP 67	IP 67	IP 67	IP 67	IP 67
Insulation class	□	□	□	□	□
Housing material	PBT	PBT	PBT	PBT	PBT
Material of sensing face	PBT	PBT	PBT	PBT	PBT
Connection	Connector	Screw terminals	Connector	Screw terminals	Screw terminals
max. wire cross-section		to 2.5 mm ²		to 2.5 mm ²	to 2.5 mm ²
Recommended connector	BKS- _19/BKS- _20		BKS- _19/BKS- _20		
possible mounting options	s _n 40 mm Fig. 1 and 2 s _n 25 mm Fig. 1 to 3	s _n 40 mm Fig. 1 and 2 s _n 25 mm Fig. 1 to 3	Fig. 1 and 2	Fig. 1 and 2	Fig. 1 and 2

① Wiring diagrams see page 1.0.6
Switching distance ■ ■ see page 1.0.10

Connector orientation



Mounting options

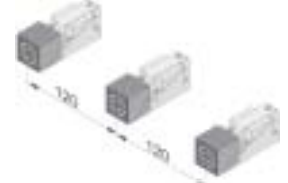


Fig. 1

Fig. 2

Fig. 3

Row mounting



80×80×40 mm

Inductive Sensors

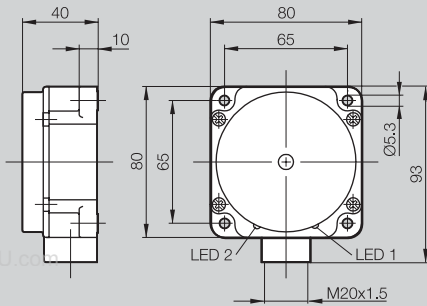
DC 4-wire
Block style housings
s_n 40 mm, 50 mm

80×80×40 mm Maxisensor
flush
40 mm
0...32.4 mm

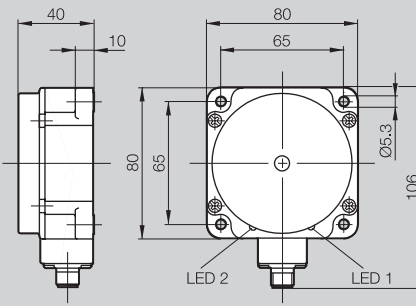
80×80×40 mm Maxisensor
non-flush
50 mm
0...40.5 mm

80×80×40 mm Maxisensor
flush
40 mm
0...32.4 mm

80×80×40 mm Maxisensor
non-flush
50 mm
0...40.5 mm



PX1573



PX0656a

1.1

BES 517-139-M4-H

BES 517-139-M5-H

BES 517-139-M4-H-S 4

BES 517-139-M5-H-S 4

BES 517-140-M5-H

BES 517-140-M5-H-S 4

24 V DC
10...55 V DC
≤ 2.5 V
250 V AC
200 mA
≤ 15 mA
≤ 80 µA
yes
yes
≤ 1 µF

24 V DC
10...55 V DC
≤ 2.5 V
250 V AC
200 mA
≤ 15 mA
≤ 80 µA
yes
yes
≤ 1 µF

24 V DC
10...55 V DC
≤ 2.5 V
250 V AC
200 mA
≤ 15 mA
≤ 80 µA
yes
yes
≤ 1 µF

24 V DC
10...55 V DC
≤ 2.5 V
250 V AC
200 mA
≤ 15 mA
≤ 80 µA
yes
yes
≤ 1 µF

≤ 5 %
-25...+70 °C
50 Hz
DC 13
yes/yes

≤ 5 %
-25...+70 °C
100 Hz
DC 13
yes/yes

≤ 5 %
-25...+70 °C
50 Hz
DC 13
yes/yes

≤ 5 %
-25...+70 °C
100 Hz
DC 13
yes/yes

IP 67
☐

IP 67
☐

IP 67
☐

IP 67
☐

PBT
PBT

PBT
PBT

PBT
PBT

PBT
PBT

Screw terminals
to 2.5 mm²

Screw terminals
to 2.5 mm²

Connector

Connector

Fig. 1 to 4

Fig. 4

BKS- 19/BKS- 20
Fig. 1 to 4

BKS- 19/BKS- 20
Fig. 4

Mounting in
steel



Fig. 1

Mounting in
non-ferrous
metals



Fig. 2

Mounting in steel/
non-ferrous metals

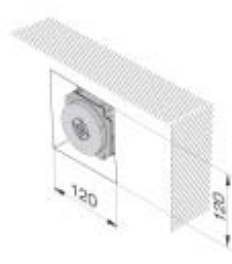


Fig. 3

Mounting on steel/
non-ferrous metals



Fig. 4



6

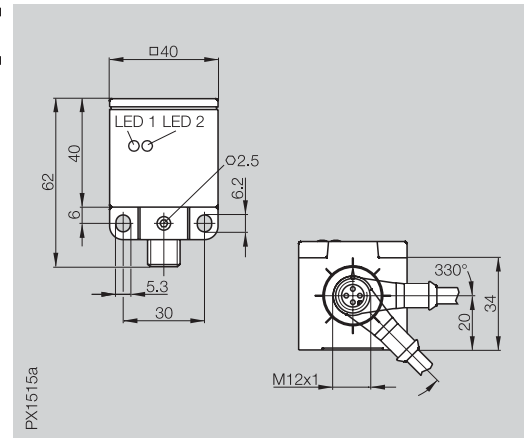
Connectors,
mounting
plate ...
page 6.2 ...

Inductive Sensors

DC 4-wire
Block style housings
 s_n 20 mm

40×40×62 mm

Housing size	40×40×62 mm Unicomcompact
Mounting (see notes starting p. 1.0.11)	flush
Rated operating distance s_n	20 mm
Assured operating distance s_a	0...16.2 mm

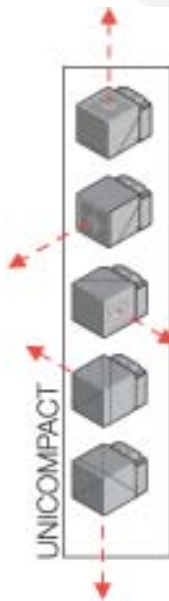


www.DataSheet4U.com

Unicomcompact

The flexible sensor for versatile application in machine and systems building and wherever space is at a premium.

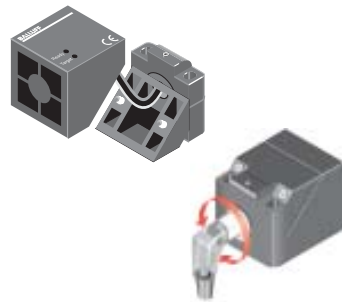
The connector can be oriented in all directions, the cable is always where it needs to be.



PNP	complementary ③
NPN	complementary ⑥
Rated operational voltage U_o	24 V DC
Supply voltage U_B	10...30 V DC
Voltage drop U_d at I_o	≤ 2.5 V
Rated insulation voltage U_i	250 V AC
Rated operational current I_o	200 mA
No-load supply current I_o max.	≤ 20 mA
Off-state current I_r	≤ 80 µA
Polarity reversal protected	yes
Short circuit protected	yes
Permissible load capacitance	≤ 1 µF
Repeat accuracy R	≤ 5 %
Ambient temperature range T_a	-25...+70 °C
Frequency of operating cycles f	50 Hz
Utilization category	DC 13
Function/power indicator	yes/yes
Degree of protection per IEC 60529	IP 67
Insulation class	□
Housing material	PBT
Material of sensing face	PBT
Connection	Connector
Approval	cULus
Recommended connector	BKS- 19/BKS- 20

BES Q40KFU-PAC20B-S04G

③ Wiring diagrams see page 1.0.6



Mounting socket BES Q40-HW-2

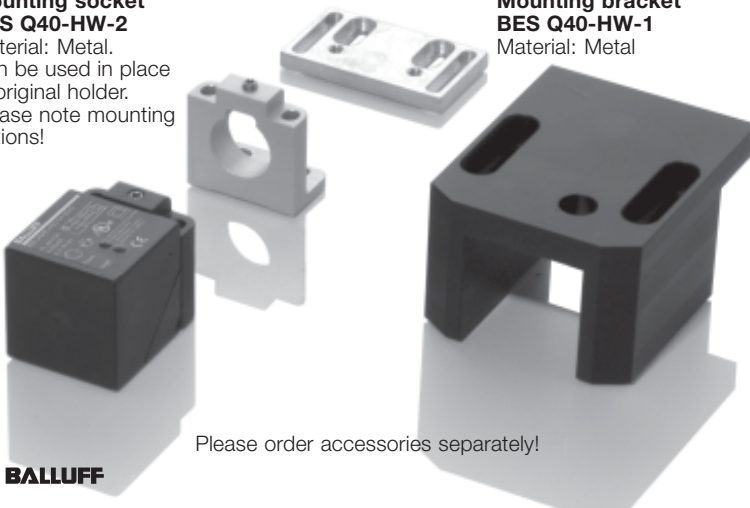
Material: Metal.
Can be used in place of original holder.
Please note mounting options!

Mounting bracket BES Q40-HW-1

Material: Metal

Protective cover BES Q40-SH-2

Material: PA 6



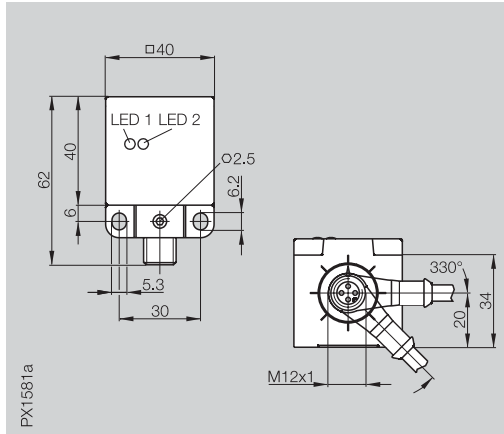
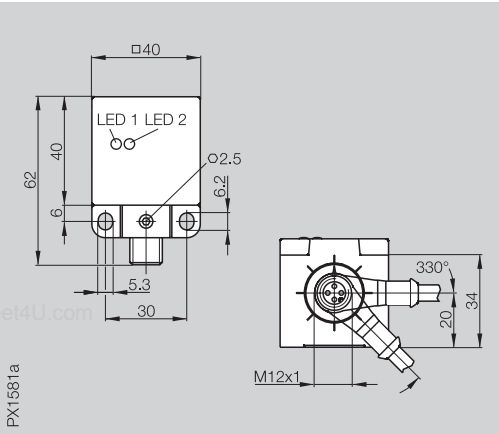
Please order accessories separately!

40x40x62 mm Inductive Sensors

DC 4-wire
Block style housings
s_n 25 mm, 30 mm

40x40x62 mm Unicomcompact
non-flush
25 mm
0...20.3 mm

40x40x62 mm Unicomcompact
non-flush
30 mm
0...24.3 mm



1.1

BES Q40KFU-PAC30F-S04G

BES Q40KFU-NAC25F-S04G

24 V DC
10...30 V DC
≤ 2.5 V
250 V AC
200 mA
≤ 20 mA
≤ 80 μA
yes
yes
≤ 1 μF

24 V DC
10...30 V DC
≤ 2.5 V
250 V AC
200 mA
≤ 20 mA
≤ 80 μA
yes
yes
≤ 1 μF

≤ 5 %
-25...+70 °C
50 Hz
DC 13
yes/yes

≤ 5 %
-25...+70 °C
50 Hz
DC 13
yes/yes

IP 67
□
PBT
PBT
Connector

IP 67
□
PBT
PBT
Connector

cULus
BKS-_ 19/BKS-_ 20

cULus
BKS-_ 19/BKS-_ 20

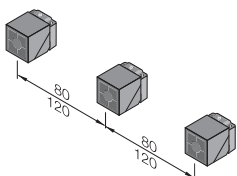
Permissible mounting options

Rated operating distance s_n

Rated operating distance s _n	attached with	permissible								
20 mm	original holder (plastic)	yes	yes	yes	yes	yes	yes	yes	yes	yes
	holder BES Q40-HW-2 (metal)	yes	yes	yes	yes	yes	yes	yes	yes	yes
25 mm	original holder (plastic)	no	no	no	yes	no	yes	yes	yes	yes
	holder BES Q40-HW-2 (metal)	no	no	no	yes	no	yes	yes	yes	yes
30 mm	original holder (plastic)	no	no	no	yes	no	yes	yes	yes	yes
	holder BES Q40-HW-2 (metal)	no	no	no	yes	no	yes	yes	no	no

Row mounting

flush 80 mm
non-flush 120 mm



6

Connectors,
holders ...
page 6.2 ...